TECHNOLOGY NEEDS/OPPORTUNITIES STATEMENT

FIXATIVES FOR K BASIN

Identification No.: RL-SNF03
Date: November 2000

Program: Spent Nuclear Fuel (SNF)
OPS Office/Site: Richland Operations Office/Hanford Site
PBS No.: RL-RS03
Waste Stream: N/A (Radioactively contaminated surfaces with loose or dispersible contamination).
TSD Title: N/A
Operable Unit (if applicable): 100-KR-2
Waste Management Unit (if applicable): N/A
Facility: K Basins

Priority Rating:

This entry addresses the "Accelerated Cleanup: Paths to Closure (ACPC)" Priority:

____ 1. Critical to the success of the ACPC
_X_ 2. Provides substantial benefit to ACPC projects (e.g., moderate to high lifecycle cost savings or risk reduction, increased likelihood of compliance, increased assurance to avoid schedule delays)
____ 3. Provides opportunities for significant, but lower cost savings or risk reduction, and may reduce uncertainty in ACPC project success.

Need Title: Fixatives for K Basin.

Need/Opportunity Category: *Technology Opportunity* -- The site desires an alternative to the current or planned baseline technology / process (e.g., a baseline exists but can be improved).

Need Description: Long-life fixatives to contain dispersible radioactive materials that are easily applied to and removed from surfaces are needed.

Schedule Requirements:

Earliest Date Required: (09/2002)
Latest Date Required: (09/2003)

The removal of fuel from the K Basins is scheduled for completion in 2004. Decontamination of the pool will proceed shortly thereafter. Completion of the K Basin Deactivation program is currently scheduled for July 2007.

Problem Description: Dispersible surface contamination may be present on KW Basin surfaces, will be present on KE Basin surfaces (basin walls and floors), and may also be present in the area surrounding the K Basin fuel storage pools. Such dispersible contamination presents a worker exposure concern and constitutes a long-term environmental concern because neither basin has HEPA filtration. In areas where decontamination is not feasible, dispersible contamination is fixed in place.

Potential Life-Cycle Cost Savings of Need (in $000s) and Cost Savings Explanation: Potential life cycle savings for fixatives for the KE are estimated to be $300, 000. The estimate is based on best engineering judgment of mortgage reduction costs associated with having contamination fixed to the basin surfaces.

Benefit to the Project Baseline of Filling Need: Eliminate use of current technology thus reducing the high maintenance cost.

Relevant PBS Milestone: S00-01-909 - Complete Spent Nuclear Fuel Project

Functional Performance Requirements: The fixative must be able to immobilize dispersible alpha, beta, and gamma contamination. The fixative must be easily removable to allow for eventual decontamination. It needs to last 20 to 25 years, and a thin film is preferred. At KE Basin, the fixative will need to be applied remotely, either in air or underwater. The fixative method must accommodate coating of both vertical and horizontal surfaces. The surfaces are not uniform with sections that vary in width from 1 inch to 125 feet.

Work Breakdown Structure (WBS) No.:	***TIP No.:***
1.3.1	S10-99-950

Justification For Need:

Technical: Dispersible radioactive contamination presents safety/exposure concerns.

Regulatory: *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) milestone M-34-00A requires complete removal of spent nuclear fuel, sludge, debris, and water by July 31, 2007. Shielding water cannot be removed until radiation and contamination are reduced.

Environmental Safety & Health: Dispersible radioactive contamination presents safety/exposure concerns.

Cultural/Stakeholder Concerns: Employee and public exposure to radioactive materials is a concern of Hanford stakeholders.

Other: None identified.

Current Baseline Technology: Tar, paint, polymers.

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